Engineering Development Model

Bi-Directional Coupler BDCA1T-ED13403/1

Important Note

This model has been designed, built and tested in our engineering department. Performance data represents model capability.
At present it is a non-catalog model. On request, we can supply a final specification sheet, part number and price/delivery information.

Please click "Back", and then click "Contact Us" for Applications support.

CASE STYLE : DZ944-3

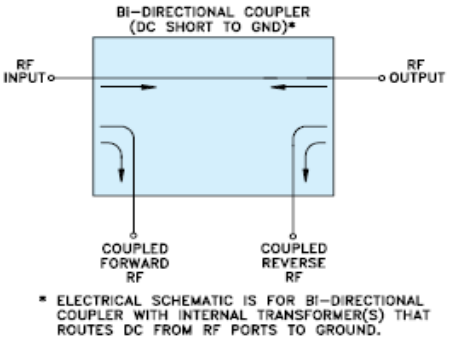
ELECTRICAL SPECIFICATIONS 50Ω @ +25°C					
Parameter		**Min.**	**Typ.**	**Max.**	**Units**
Frequency		700		1300	MHz
Coupling	**Nominal**		20.5±0.8		dB
	Flatness		±0.8		dB
Mainline Loss*	**700-1300 MHz**		0.45		dB
Directivity	**700-1300 MHz**		20		dB
VSWR	**700-1300 MHz**		1.06		(:1)
RF Power Input	**700-1300 MHz**			10	W

Note: * Mainline loss includes theoretical coupled power loss of .039 dB at 20.5 dB coupling.

MAXIMUM RATINGS	
Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C

PIN CONNECTIONS	
INPUT	1
OUTPUT	6
COUPLED FORWARD	10
COUPLED REVERSE	5
GROUND	2,3,4,7,8,9

Electrical Schematic



* ELECTRICAL SCHEMATIC IS FOR BI-DIRECTIONAL COUPLER WITH INTERNAL TRANSFORMER(S) THAT ROUTES DC FROM RF PORTS TO GROUND.

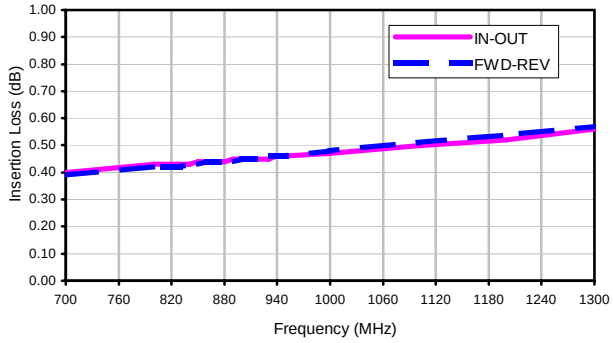
Bi-Directional Coupler BDCA1T-ED13403/1

Typical Performance Data

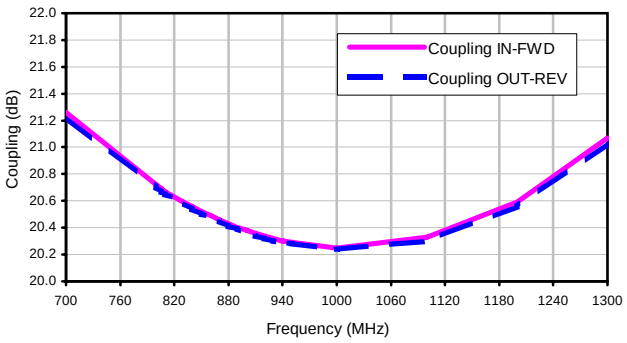
FREQUENCY (MHz)	INSERTION LOSS (dB)		COUPLING (dB)		DIRECTIVITY (dB)		RETURN LOSS (dB)			
	IN-OUT	FWD-REV	IN-FWD	OUT-REV	IN-REV	OUT-FWD	IN	OUT	FWD	REV
700.0	0.40	0.39	21.26	21.23	23.57	30.74	26.66	26.42	29.65	29.72
800.0	0.43	0.42	20.72	20.70	21.29	25.66	27.85	26.93	30.30	30.51
806.0	0.43	0.42	20.69	20.67	21.18	25.46	27.99	27.02	30.36	30.58
810.0	0.43	0.42	20.67	20.65	21.09	25.27	28.08	27.07	30.40	30.65
820.0	0.43	0.42	20.63	20.62	20.94	24.89	28.34	27.26	30.51	30.81
830.0	0.43	0.42	20.59	20.58	20.75	24.52	28.60	27.46	30.64	30.97
840.0	0.43	0.43	20.56	20.54	20.55	24.20	28.83	27.64	30.79	31.17
850.0	0.44	0.43	20.52	20.50	20.38	23.80	29.12	27.81	31.00	31.37
860.0	0.44	0.44	20.49	20.48	20.19	23.46	29.40	27.95	31.27	31.57
870.0	0.44	0.44	20.46	20.45	20.03	23.15	29.74	28.06	31.52	31.85
880.0	0.44	0.44	20.43	20.41	19.87	22.81	30.12	28.27	31.72	32.18
890.0	0.45	0.44	20.40	20.39	19.74	22.50	30.55	28.49	31.87	32.50
900.0	0.45	0.45	20.38	20.36	19.56	22.21	31.00	28.76	32.05	32.86
910.0	0.45	0.45	20.36	20.34	19.42	21.88	31.51	29.02	32.29	33.17
920.0	0.45	0.45	20.34	20.32	19.26	21.61	32.10	29.27	32.56	33.53
930.0	0.45	0.46	20.32	20.30	19.10	21.30	32.78	29.54	32.83	33.80
940.0	0.46	0.46	20.30	20.29	18.94	21.07	33.46	29.87	33.11	34.30
941.0	0.46	0.46	20.30	20.29	18.92	21.00	33.54	29.91	33.15	34.37
950.0	0.46	0.46	20.29	20.28	18.78	20.77	34.10	30.15	33.44	34.87
1000.0	0.47	0.48	20.25	20.24	18.06	19.48	38.91	31.25	34.84	38.60
1100.0	0.50	0.51	20.33	20.30	16.81	17.18	39.98	30.89	35.63	53.93
1200.0	0.52	0.54	20.59	20.56	15.63	15.23	28.86	26.60	31.39	34.89
1300.0	0.56	0.57	21.07	21.03	14.61	13.39	24.00	23.03	27.57	28.92

Typical Performance Curves

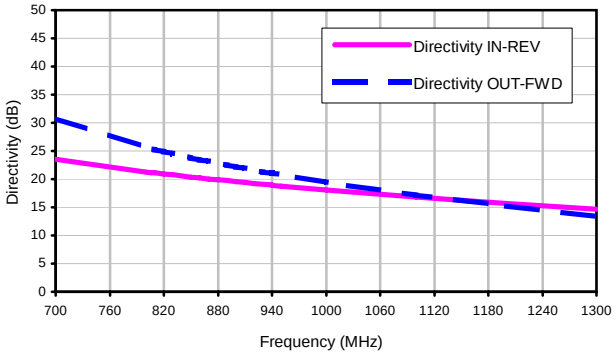
Insertion Loss



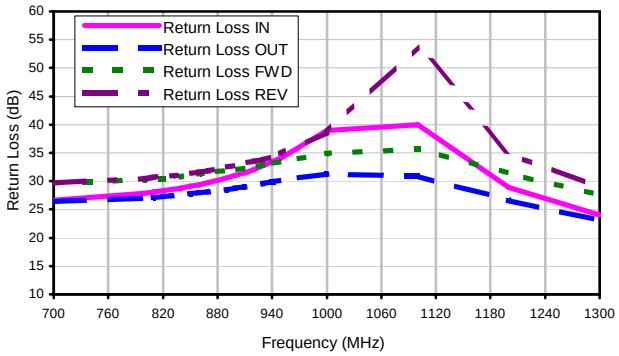
Coupling



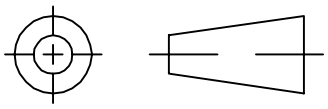
Directivity



Return Loss

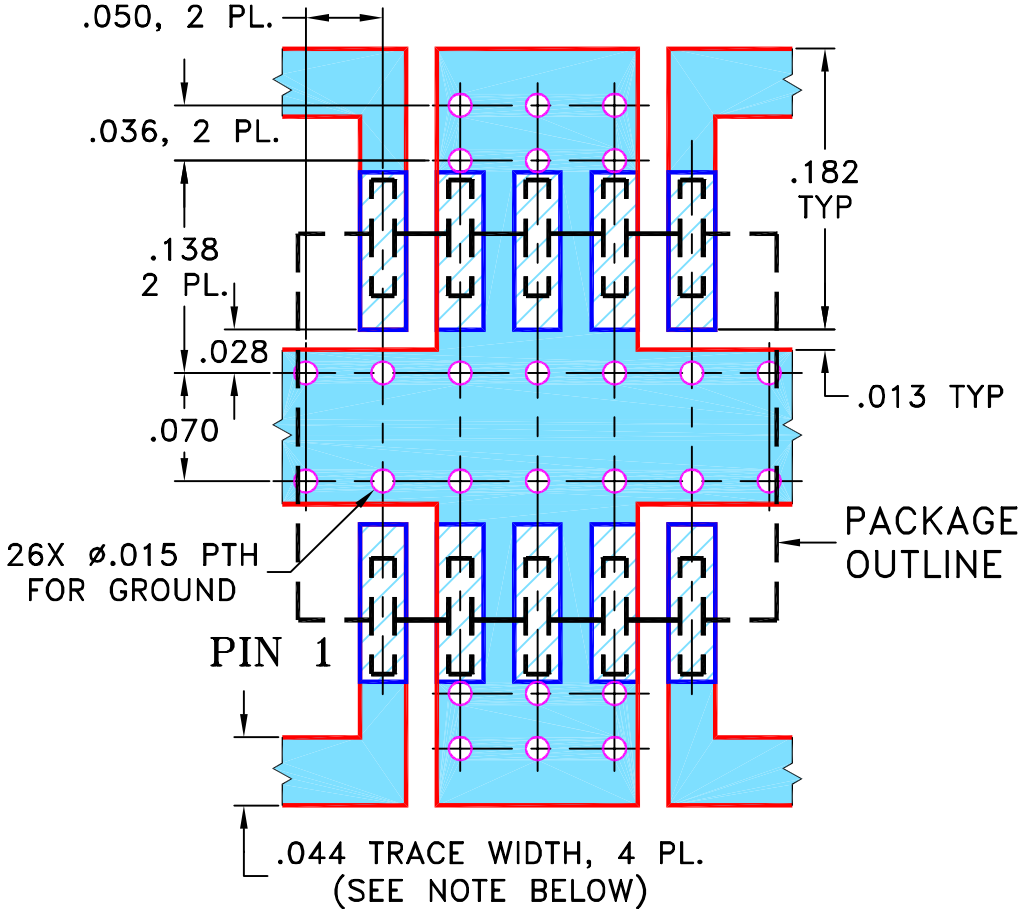


THIRD ANGLE PROJECTION



REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
A	M82377	UPDATED DRAWING	07/31/02	AV	DB
B	M101085	UPDATED DRAWING, ADDED DZ944 CASE STYLE & NOTE 2	10/06/05	MMG	HY
C	M102713	UPDATED NOTES	01/10/06	MMG	ABD

SUGGESTED MOUNTING CONFIGURATION FOR SM1L/SM33/DZ944 CASE STYLES, "lf/nl" PIN CONNECTIONS



NOTE: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .020 ± .0015; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.

2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

UNLESS OTHERWISE SPECIFIED		INITIALS	DATE
DIMENSIONS ARE IN INCHES	DRAWN	MMG	04/12/00
TOLERANCES ON:	CHECKED	WP	04/27/00
2 PL DECIMALS ±	APPROVED	DB	04/27/00
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

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ASHEETA1.DWG REV:A DATE:01/12/95

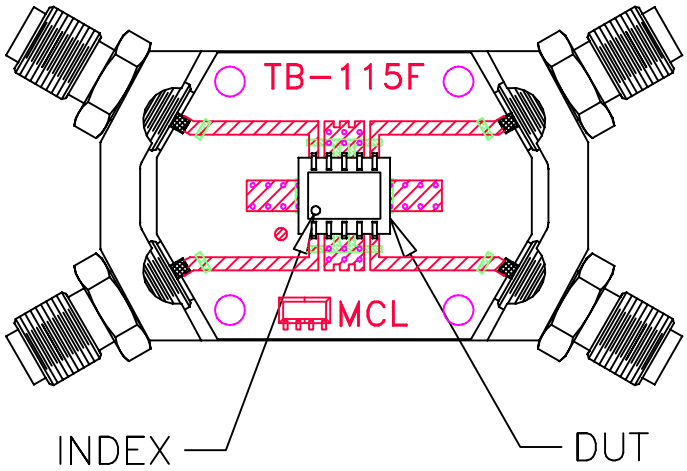
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

PL, lf/nl, SM1L/SM33/DZ944, BDCA/QBA, TB-115

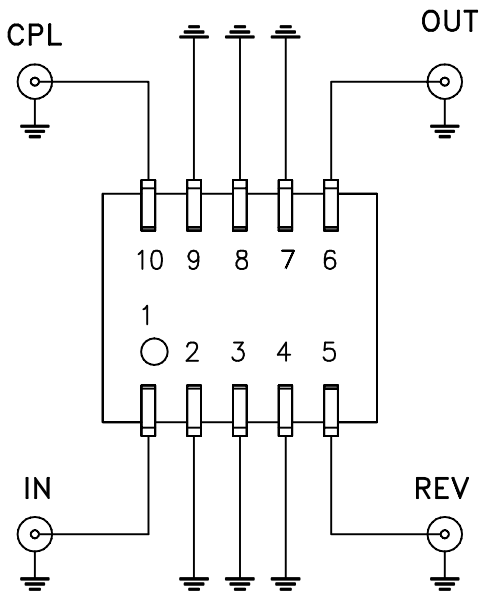
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-004	C

FILE:	SCALE:	SHEET:
98PL004	8:1	1 OF 1

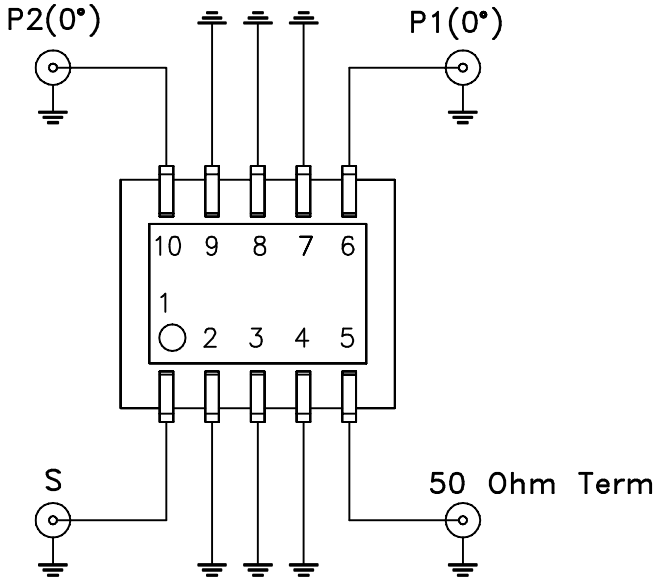
Evaluation Board and Circuit



TB-115+



BDCA MODELS



QBA MODELS

SCHEMATIC DIAGRAM

Notes:

1. SMA Female connectors.
2. PCB Material: Rogers RO4350 or equivalent, Dielectric Constant=3.5, Thickness=.020 inch.

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Environmental Specifications ENV02T2

All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-55° to 100°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Humidity	90 to 95% RH, 240 hours, 50°C	MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Solder Reflow Heat	Sn-Pb Eutetic Process: 225°C peak Pb-Free Process 245° - 250°C peak	J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1
Solderability	10X Magnification	J-STD-002, 95% Coverage
Vibration (High Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-202, Method 204, Condition D
Mechanical Shock	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215

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